APPENDIX A

SPECIES ACCOUNTS

Sacramento Fish & Wildlife Office
Species Account

CALIFORNIA TIGER SALAMANDER
(Ambystoma californiense)

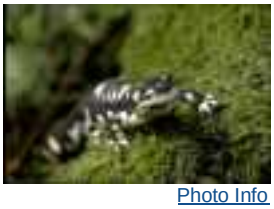

Photo Info

CLASSIFICATION: **Federal Threatened Species** (*Federal Register* 69:47211-47248 pdf; August 4, 2004)

On 8/4/04, we listed the CA tiger salamander as threatened throughout its range. In doing so, we changed the status of the Santa Barbara and Sonoma county populations from endangered to threatened. On 8/10/04, we proposed 47 critical habitat units in 20 counties.

CRITICAL HABITAT: 69:48569-48649 pdf; August 10, 2004

RECOVERY PLAN: Vernal Pools of Northern California (Under development)

DESCRIPTION:

The California tiger salamander (*Ambystoma californiense*) is an amphibian in the family Ambystomatidae. It is a large, stocky, terrestrial salamander with a broad, rounded snout. Adults males are about 8 inches long, females a little less than 7.

Coloration consists of white or pale yellow spots or bars on a black background on the back and sides. The belly varies from almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black. The salamander's small eyes protrude from their heads. They have black irises.

Males can be distinguished from females, especially during the breeding season, by their swollen *cloacae*, a common chamber into which the intestinal, urinary, and reproductive canals discharge. They also have more developed tail fins and, as mentioned above, larger overall size.

The species is restricted to grasslands and low (under 1500 foot) foothill regions where lowland aquatic sites are available for breeding. They prefer natural ephemeral pools or ponds that mimic them (stock ponds that are allowed to go dry).

Larvae require significantly more time to transform into juvenile adults than other amphibians such as the western spadefoot toad (*Scaphiopus hammondii*), a Species of Concern, and Pacific tree frog (*Pseudacris regilla*).

These requirements restrict California tiger salamanders to large vernal pools, vernal playas and large sag ponds. Compared to the western toad (*Bufo boreas)* or western spadefoot toad, California tiger salamanders are poor burrowers. They require refuges provided by ground squirrels and other burrowing mammals in which to enter a dormant state called *estivation*

during the dry months.

DISTRIBUTION:

The range of California tiger salamander is restricted to California. The species persists in disjunct remnant vernal pool complexes in Sonoma (see map in pdf) and Santa Barbara counties, in vernal pool complexes and isolated ponds scattered mainly along narrow strips of rangeland on each side of the Central Valley from southern Colusa County south to northern Kern County, and in sag ponds and human-maintained stock ponds in the coast ranges from Suisun Bay south to the Temblor Range.

The California tiger salamander has been eliminated from an estimated 55 to 58 percent of its historic breeding sites and has lost an estimated 75 percent of its habitat. Although there are approximately 150 known local populations of California tiger salamanders, the species is currently protected only at Jepson Prairie Natural Preserve and Hickson Preserve.

SPECIAL CONSIDERATIONS:

A typical salamander breeding population in a pond can drop to less than twenty breeding adults and/or recruiting juveniles in some years, making these local populations prone to extinction. California tiger salamanders therefore require large contiguous areas of vernal pools (vernal pool complexes or comparable aquatic breeding habitat) containing multiple breeding ponds to ensure recolonization of individual ponds.

The primary cause of the decline of California tiger salamander populations is the loss and fragmentation of habitat from human activities and the encroachment of nonnative predators. Federal, State and local laws have not prevented past and ongoing losses of habitat. All of the estimated seven genetic populations of this species have been significantly reduced because of urban and agricultural development, land conversion, and other human-caused factors.

A strong negative association between bullfrogs and California tiger salamanders has been documented. Although bullfrogs are unable to establish permanent breeding populations in vernal pools, dispersing immature frogs from permanent water bodies within two miles take up residence and prey on adult or larval salamanders in these areas during the rainy season. Louisiana swamp crayfish, mosquito fish, green sunfish and other introduced fishes also prey on adult or larval salamanders.

A deformity-causing infection, possibly caused by a parasite in the presence of other factors, has affected pond-breeding amphibians at known California tiger salamander breeding sites. This same infection has become widespread among amphibian populations in Minnesota and poses the threat of becoming widespread here.

Reduction of ground squirrel populations to low levels through widespread rodent control programs may reduce availability of burrows and adversely affect the California tiger salamander. Poison typically used on ground squirrels is likely to have a disproportionately adverse effect on California tiger salamanders, which are smaller than the target species and have permeable skins. Use of pesticides, such as methoprene, in mosquito abatement may have an indirect adverse effect on the California tiger salamander by reducing the availability of prey.

Various nonnative subspecies of the tiger salamander within the *Ambystoma tigrinum* complex have been imported into California for use as fish bait. The introduced salamanders may out-

compete the California tiger salamanders, or interbreed with them to create hybrids that may be less adapted to the California climate or are not reproductively viable past the first or second generations.

Automobiles and off-road vehicles kill a significant number of migrating California tiger salamanders, and contaminated runoff from roads, highways and agriculture may adversely affect them.

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APPENDIX A

Baker's Stickyseed
See photo info

Sacramento Fish & Wildlife Office Species Account

BAKER'S STICKYSEED (*Blennosperma bakeri*)

CLASSIFICATION: **Federal Endangered Species** (*Federal Register* 56:61173 (pdf); December 2, 1991)

CRITICAL HABITAT: None designated.

RECOVERY PLAN: Vernal Pools of Northern California (Under development)

DESCRIPTION:

Baker's stickyseed (*Blennosperma bakeri*), which is also known as Sonoma sunshine, is a small (up to 12 inches in height), annual herb in the aster family (Asteraceae). The plant has alternate, narrow, hairless leaves, 2 to 6 inches long. The upper ones have 1 to 3 lobes, the lower ones none.

From March through April, the species produces yellow daisy-like flowers. The yellow disk flowers have white pollen and stigmas. Sterile ray flowers, which are yellow or sometimes white, have red stigmas. The lobe pattern of the leaves and the color of ray stigmas separate this species from other in the genus. See Hickman (1993) in General Information about California Plants, below, for a detailed description.

DISTRIBUTION:

Blennosperma bakeri is found in grasslands and vernal pools. The species is restricted to Sonoma County. It is known from 35 sites in Cotati Valley and 7 other sites in Sonoma Valley.

Other endangered plants found in the Cotati Valley include Sebastopol meadowfoam (*Limnanthes vinculans*) and Burke's Goldfields (*Lasthenia Burkei*).

SPECIAL CONSIDERATIONS:

Approximately 30 percent of the historic occurrences have been eliminated or seriously damaged. Most of the remaining sites are threatened by urbanization, wastewater effluent irrigation, and agricultural land conversion. Westward expansion of the City of Santa Rosa threatens at least half the remaining habitat.

The species was listed as endangered by the California Department of Fish and Game in February 1992. The California Native Plant Society has placed it on List 1B (rare or endangered throughout its

range).

REFERENCES FOR ADDITIONAL INFORMATION: (See our Disclaimer)

U.S. Fish & Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Three Plants: Blennosperma bakeri (Sonoma Sunshine or Baker's Stickyseed), Lasthenia burkei (Burke's Goldfields), and Limnanthes vinculans (Sebastopol Meadowfoam). Portland, Oregon.

See also: Madroño 9:103-104 (1947).

Sebastopol meadowfoam
See photo info

Sacramento Fish & Wildlife Office Species Account

SEBASTOPOL MEADOWFOAM (Limnanthes vinculans)

CLASSIFICATION: **Federal Endangered Species** (*Federal Register* 56:61173 (pdf); December 2, 1991)

CRITICAL HABITAT: None designated.

RECOVERY PLAN: Vernal Pools of Northern California (Under development)

DESCRIPTION:

Sebastopol meadowfoam (*Limnanthes vinculans*) is a small (up to 12-inch tall), multi-stemmed herb of the false meadowfoam family (Limnanthaceae). Although the first leaves are narrow and undivided, leaves on the mature plant have three to five undivided leaflets along each side of a long stalk (petiole). The shape of the leaves distinguishes Sebastopol meadowfoam from other members of the *Limnanthes* genus.

Small, bowl-shaped, white flowers appear April through May. The white flowers are born singly at the end of stems. See Hickman (1993) in General Information about California Plants, below, for a detailed description of the species.

DISTRIBUTION:

The species has not been recorded outside southwestern Cotati Valley, where it occurs in less than thirty locations. It is found in seasonally wet meadows, swales and vernal pools in the Laguna de Santa Rosa, Sonoma County. The species ranges from the city of Graton,

east to Santa Rosa, southeast to Scenic Avenue, and southwest to the community of Cunningham, largely surrounding the northern and western perimeter of the city of Sebastopol.

Other endangered plants found in the Cotati Valley include Sonoma Sunshine or Baker's Stickyseed(*Blennosperma bakeri*) and Burke's Goldfields (*Lasthenia burkei*).

SPECIAL CONSIDERATIONS:

Primary threats to the species consist of activities that result in the destruction of the plants or hydrologic changes in their habitats. Such activities include urbanization, industrial development, agricultural land conversion, off-highway vehicle use, horseback riding, trampling by grazing cattle and road widening.

This species was listed as endangered by the California Department of Fish and Game in November 1979. The California Native Plant Society has placed it on List 1B (rare or endangered throughout its range).

REFERENCES FOR ADDITIONAL INFORMATION:

U.S. Fish & Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Three Plants: Blennosperma bakeri (Sonoma Sunshine or Baker's Stickyseed), Lasthenia burkei (Burke's Goldfields), and Limnanthes vinculans (Sebastopol Meadowfoam). Portland, Oregon.

Burke's Goldfields
See photo info

Sacramento Fish & Wildlife Office

Species Account

BURKE'S GOLDFIELDS (*Lasthenia burkei*)

Calyx view

CLASSIFICATION: **Federal Endangered Species** (*Federal Register* 56:61173 (pdf); December 2, 1991)

CRITICAL HABITAT: None designated

RECOVERY PLAN: Vernal Pools of Northern California (Under development)

DESCRIPTION:

Burke's goldfields (*Lasthenia burkei*) is a small, slender annual herb in the sunflower family (Asteraceae). It has narrow, opposite leaves. The plant can be easily confused with other goldfields such as Contra Costa goldfields (*L. conjugens*) by people not trained in botany. See Hickman (1993) in General Information about California Plants, below, for a detailed description

of Burke's goldfields and other goldfields (*Lasthenia*) species.

Flowers bloom from April until June. Both the ray and disk flowers are yellow, while the pappus (seed appendage that aids dispersal by acting like a little parachute) usually consists of one long bristle and several short bristles.

DISTRIBUTION:

This vernal pool species is known only from southern portions of Lake and Mendocino counties and from northeastern Sonoma County. Historically, 39 populations were known from the Cotati valley, 2 sites in Lake county, and one site in Mendocino County. The occurrence in Mendocino County is most likely extirpated. From north to south in the Cotati Valley, the species ranges from north of the community of Windsor to east of the city of Sebastopol.

Other endangered plants found in the Cotati Valley include Sonoma Sunshine or Baker's Stickyseed (*Blennosperma Bakeri*) and Sebastopol meadowfoam (*Limnanthes vinculans*).

SPECIAL CONSIDERATIONS:

Primary threats to the species consist of activities that result in the destruction of the plants or hydrologic changes in their vernal pool habitats. Such activities include urbanization, industrial development, agricultural land conversion, off-highway vehicle use, horseback riding, trampling by grazing cattle, and road widening. Damage or destruction of vernal pool habitat happens quickly and easily due to the extremely friable nature of the soil and the dependency of the pool upon an intact *durapan* (impermeable subsurface soil layer).

This species can be easily confused with other goldfields (*Lasthenia*). It can be separated from similar members of the genus by others having a pappus having two or more long bristles or the pappus is absent entirely.

This species was listed as endangered by the California Department of Fish and Game in September 1997. The California Native Plant Society has placed it on List 1B (rare or endangered throughout its range).

REFERENCES FOR ADDITIONAL INFORMATION:

U.S. Fish & Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Three Plants: Blennosperma bakeri (Sonoma Sunshine or Baker's Stickyseed), Lasthenia burkei (Burke's Goldfields), and Limnanthes vinculans (Sebastopol Meadowfoam). Portland, Oregon.

General Information about California Plants

APPENDIX A

Many-Flowered Navarretia
See photo info

Sacramento Fish & Wildlife Office Species Account

MANY-FLOWERED NAVARRETIA (*Navarretia leucocephala* ssp. *plieantha*)

CLASSIFICATION:**Federal Endangered Species** (*Federal Register* 62:33029 pdf; June 18, 1997)

CRITICAL HABITAT: None designated.

RECOVERY PLAN: Vernal Pools of Northern California (Under development)

DESCRIPTION:

Many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*) is a prostrate annual herb in the phlox family (Polemoniaceae). This plant forms small mats that can range from 2-8 inches wide. The leaves are about 1 inch long, linear and have a few lobes.

The plant flowers in May to June. The flowers are clustered in a head at the end of stems. The head is composed of 20-50 white to blue flowers.

Many-flowered navarretia grows with and can be easily confused with several other navarretias. Among the closely related ones are the endangered few-flowered navarretia (*Navarretia leucocephala* ssp. *pauciflora*) and Baker's navarretia (*Navarretia leucocephala* spp. *bakeri*), a species of concern . Many-flowered navarretia forms hybrids with few-flowered navarretia. The hybrids do not fit well into any established subspecies. See Hickman (1993) in General Information about California Plants, below, for a detailed description of the various subspecies of *Navarretia leucocephala*.

DISTRIBUTION:

Many-flowered navarretia is found in dry meadows, along the margins of volcanic ash vernal pools and lakes and in open wet ground in forest openings. Only a few locations of this species are known from Lake and Sonoma counties. The plant grows in a 400 square mile area, at elevations from 1,800 to 2,800 feet.

SPECIAL CONSIDERATIONS:

The primary threats to vernal pool species are activities that result in the direct destruction of the plants and their habitats or hydrologic changes in their vernal pool habitats. Damage or destruction of vernal pool habitat happens quickly and easily due to the extremely crumbly nature of the soil and the dependency of the pool upon an intact durapan or impermeable subsurface soil layer. Attempted drainage of a pool in Lake County containing

many-flowered navarretia resulted in the invasion of two competitive weeds, yellow star-thistle (*Centaurea solstitialis*) and medusahead (*Taeniatherum caput-medusa*).

Off-highway vehicle use has resulted and continues to result in the destruction of plants and habitat of Navarretia leucocephala ssp. plieantha at four population sites in Lake County. The California Department of Fish and Game has provided fencing at the Loch Lomond site to prevent off-highway vehicle entry into the area.

This species was listed as endangered by the California Department of Fish and Game in November 1979. The California Native Plant Society has placed it on List 1B (rare or endangered throughout its range).

REFERENCES FOR ADDITIONAL INFORMATION:

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